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U. S. DEPARTMENT OF AGRICULTURE

Southwestern stockman—

Play to win!

Don't plunge
on the "good years"

Stock this year and
every year
for fat cows, a big calf crop,
and a safe forage margin

U. S. DEPARTMENT OF AGRICULTURE
AWI-74

CONSERVATIVE STOCKING

In earlier peacetimes and in the days when cattle raising was on a free-for-all and catch-as-catch-can basis, an operator's inclination to play for uncertain stakes was his own lookout.

Today, cattle raising is an essential war industry.

Not only this year and next year, but also all during the war and the immediate post-war period, the demand on the southwestern ranges for more and better beef production is going to be heavy. Our soldiers, war workers and other civilians, and lend-lease commitments are requiring more and more beef and hides. To meet this continuing demand, the southwestern operator will have to make his forage resource go further and last longer than it ever did before.

Today's Responsibility

Whether a rancher produces a maximum of beef this year and still keeps his range in condition for similar production in future years now concerns not only himself but also millions of consumers. His responsibility now is to realize high production and a fair return year in and year out; not to gamble on good years and drought years, but to count on their fairly regular recurrence; to make the weather work for him instead of pitting himself against it.

In general, he can do this by so regulating the stocking of his range that in normal years (1) the livestock will keep in the best productive condition; (2) the range itself will be built up rather than pulled down; and (3) the better forage plants will accumulate a reserve of productivity against the drought years that may be expected every decade.

This practical and profitable system of range livestock management is called conservative stocking.

More Grass, More Beef

Conservative stocking is especially profitable for beef production on yearlong ranges of the Southwest, where rainfall and forage production fluctuate greatly from year to year. Experience and research have shown that

the best beef production goes hand in hand with the greatest production of range forage.

More grass, more meat, more money are attainable by following closely a few recommended practices, application of which not only puts money in the pocket of the individual rancher and benefits the range livestock industry generally, but also results in a greater contribution to the Food for Freedom program (fig. 1).

FIGURE 1.—*A good range, a fat cow, a big calf. One hundred cows like this on the Santa Rita Experimental Range near Tucson, Ariz., under conservative grazing, produced 90 calves averaging 425 pounds when marketed at 8 months old.*

WHAT CONSERVATIVE STOCKING DOES

For the Animals

On range conservatively stocked year after year, all grazing animals have planty to eat for the entire yearlong season. In the Southwest, beef cows so stocked on good range will attain a weight of 1,000 pounds or more and should produce an 80 to 90 percent or higher calf crop. Calves from these cows will weigh 400 to 450 pounds or more at 8 months of age. These results are actually being obtained, by a cooperative stockman, from conservative stocking on the Santa Rita Experimental Range in Arizona.

A comparison of beef production on this area with average outside range shows that conservative stocking

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results in an average of 27 more calves per 100 breeding cows and a death loss of approximately 4 to 5 head less per 100 animals (fig. 2).

FIGURE 2.—*The calf crop is high and the calves uniformly of good weight under conservative stocking.*

For the Range

Conservative stocking results in vigorously growing range-forage plants. Perennial range plants thrive and spread only as they are enabled to store up each year organic foods or starchy substances in stem bases and roots, with which to start their new growth the following year. When the range is too heavily stocked many plants may be prevented from storing these vital foods and the crowns may be exposed. Where this occurs, only about half as much forage is likely to be produced.

For example, on black grama areas of the Jornada Experimental Range in southern New Mexico it was found that the total forage crop during 1942 on a conservatively stocked area was 475 pounds per acre. On heavily grazed ranges with the same ground cover of grasses, the yield was 240 pounds per acre.

If heavy grazing continues it results not only in less forage production but finally also in the death of the forage plants. On the other hand, under conservative grazing, valuable forage plants have the opportunity for full productive growth and development.

CONSERVATIVE STOCKING vs. DROUGHT

In the Southwest either regional or local droughts occur in about 1 year out of 3, and occasionally are prolonged. Such droughts can neither be avoided nor prevented; they can, however, be anticipated and provided for.

Fortunately, most of the rainfall on yearlong ranges in the Southwest is received in the summer months. By the end of the growth season in October the ranch operator knows how much forage is on the ground. He can accordingly, by skillful marketing, adjust the numbers of livestock at that time to what the range will carry until the following summer.

A Common Mistake

His greatest hazard is overoptimism. In good years he is greatly tempted to increase numbers of livestock. He hopes thereby to secure increased returns and to avoid what he is inclined to regard as wastage of forage.

But experience has shown that the lush growth of grasses resulting from heavy rains is frequently low in food value. More than the usual volume of this kind of forage is needed to maintain a cow at a high level of production.

Also, it must be understood that underuse of forage on a range does not necessarily involve wastage, but rather contributes to a forage reserve, one of the most valuable assets of the yearlong range.

"Money in the Bank"

It is in times of drought that the great value of this forage reserve, built up by conservative stocking, becomes apparent. Livestock are stronger and healthier, making necessary less severe culling of the herd because of the lessened forage; the "carry-over" forage from the preceding year is a greatly needed contribution to the drought-year production; and the vegetation itself is stronger and better able to withstand lack of water.

Instead of facing wholesale disposal of his animals to prevent starvation, the stockman is able to retain the younger and more desirable members of his herd.

If he has to sell off stock, aside from the usual current disposal of steers, culls, and most of the calves, he can

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restrict it to the older breeding animals, replacing them with young heifer calves and yearlings, which require only about half as much forage and will probably thrive better (fig. 3).

FIGURE 3.—*A carefully planned and executed program of yearly marketing related to conservative stocking would prevent such abuse of livestock and range.*

CONSERVATIVE STOCKING GUIDES

Condition

The range itself furnishes good clues by which its condition and current utilization may be judged.[1] A southwestern yearlong range, conservatively stocked over the years, will exhibit:

1. Good condition of the forage and soil, as indicated by a thick stand of valuable perennial grasses, such as blue and black grama, and vigorous growth and good production.

2. Litter accumulated on the soil surface; soil blowing prevented by the good stand of vegetation.

3. No bad gullies.

Utilization

A range that is at present conservatively stocked will have the following characteristics:

1. Ranges in good condition are maintaining a good, vigorous forage production.

2. Range overused in the past will now be on the

[1] Judging conditions of the range is more fully discussed in U. S. Department of Agriculture Farmers' Bulletin 1782, Indicators of Southwestern Range Conditions.

upgrade, as evidenced by vigorous growth of the important forage plants with tufts spreading, new seedlings or sets of grasses becoming established during years of favorable moisture, noxious plants giving way, litter gradually accumulating on the surface, gullies healing over.

3. The important forage plants will be only moderately grazed.

4. The soil will be little disturbed by trampling.

Prolonged Overuse

Signs of ranges overstocked over the years are very apparent:

1. The important forage plants will be thinly scattered and low in vitality, and in many cases soil washing will have left them pedestaled and weakened.

2. Such noxious plants as snakeweed will usually be abundant.

3. The exposed soil will be bare and wind-swept, with little or no litter.

4. Gullies and other signs of abnormal wind and water erosion will be evident.

Current Overuse

Earmarks of current overstocking are easy to read:

1. The range is on the downgrade; the vitality of forage grasses is lowered and production is below par; rainfall doesn't seem as effective as in former years; sod is thinning or the cover of bunchgrasses is breaking up and dying out; noxious plants are increasing in abundance.

2. Important forage plants are being grazed too closely. The palatable browse has been heavily pruned, dead branches are appearing, and some entire plants are dying.

3. New gullies are forming.

What Is Proper Utilization?

To balance the forage crop against the number of animals it will graze, a problem of yearly recurrence, you must know how much herbage can be removed from the different forage plants without lowering their vigor or materially affecting their powers of reproduction.

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Under proper use, some individual plants will remain ungrazed throughout the year, some will be lightly grazed, and others are apt to be closely grazed. A properly used range will at the end of the grazing year or season look "patchy," whereas an overused range will often be grazed closely to a uniform height (fig. 4).

FIGURE 4.—*How much grass should be removed by grazing? Area to left illustrates proper use in mixed grama grass stand with 2-inch stubble and about 25 percent of flower stalks with 40 to 45 percent of weight removed. Area to right too heavily grazed with 1-inch stubble, no flower stalks, and 70 to 75 percent of weight removed.*

In general, for most of the good perennial southwestern grasses, about a fourth of the flower stalks should be left in June, at the end of the grazing year, and the rest grazed down to a minimum stubble height that varies for different forage species (figs. 5 and 6).

A proper stubble height will insure the reserve of 50 to 65 percent of the volume of weight of the plant that should be carried over into the next growing season. How this works out for the different species is shown in table 1. Thus, grazing blue grama [2] to a height of 2 inches usually removes about 90 percent of the height but only 50 percent of the volume or weight.

[2] The grazing of this important southwestern grass is discussed at length in U. S. Department of Agriculture Leaflet No. 215, How To Graze Blue Grama on Southwestern Ranges.

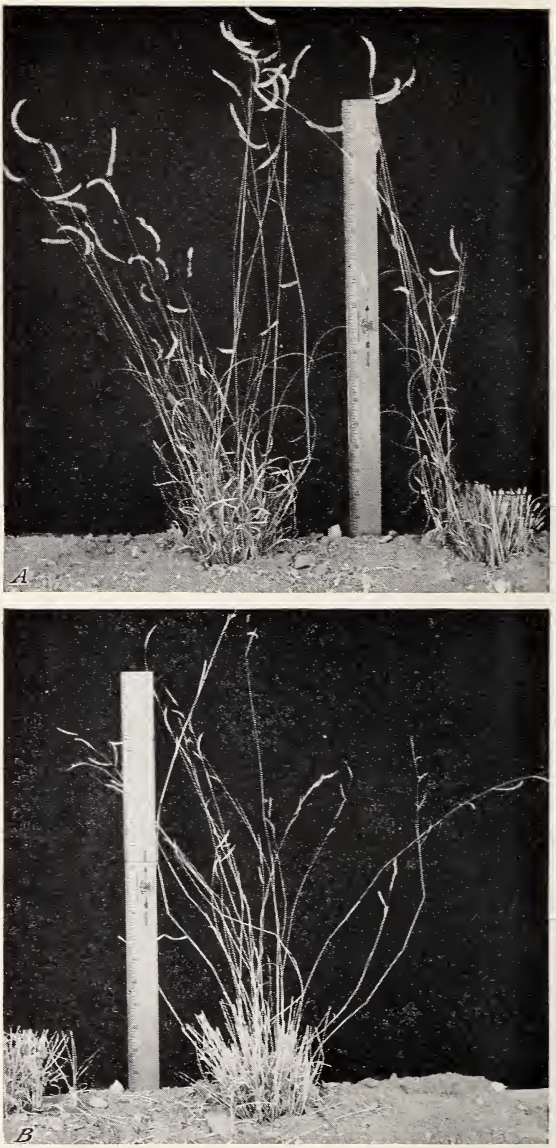

FIGURE 5.—*Grama grasses harvested to illustrate proper use at end of grazing season:* A, *Blue grama—ungrazed plant to left, plant to right properly used with 2- to 3-inch stubble and about 25 percent of flower stalks left standing.* B, *Black grama—the two clumps considered represent about proper use with an average stubble height of 3 inches or more and 25 percent of the flower stalks untouched.*

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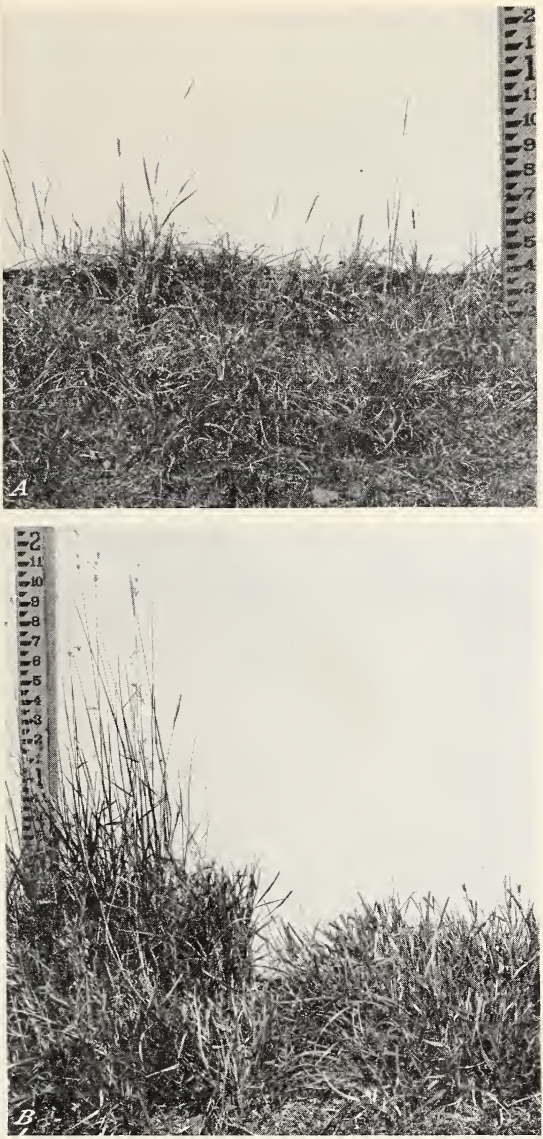

FIGURE 6.—*Curly mesquite and tobosa grass properly grazed at season's end:* A, *Curly mesquite—approximate proper use down to 1½ to 2 inches stubble; 15 to 20 percent of flower stalks remaining.* B, *Tobosa—representing about proper use where it occurs with more palatable grasses such as black grama; in pure types it may be safely grazed to an average height of 4 inches, with only a few flower stalks left.*

TABLE 1.—*Utilization guide before summer growth starts*

Common name of grass	If range is in good condition—		If range is deteriorated—	
	Stubble height will be—	Indicating volume use of—	Stubble height will be—	Indicating volume use of—
	Inches	*Percent*	*Inches*	*Percent*
Alkali sacaton	3½	35	5½	20
Arizona cottongrass	5	40	6	30
Black grama	4–3	[1] 40–50	5	30
Blue grama	3–2	[2] 40–50	4	30
Curly mesquite	1½	40	2½	20
Galleta	3	40	4	30
Poverty three-awn	4	50	5½	40
Sand dropseed	6	35	9	20
Sideoats grama	4	45	6	30
Tobosa	4	30	6	15

[1] Loose soil, 40; hard soil, 50.
[2] Arizona and western two-thirds of New Mexico, 40; plains of eastern New Mexico, 50.

Important Considerations

In adjusting the degree and intensity of grazing on each range, the operator has to take into account such factors as terrain, adequacy of water (fig. 7), size and shape of pastures, kind and class of livestock, soil, rainfall, palatability and feed value of the vegetation, and volume of forage crop.

FIGURE 7.—*Water development affords better distribution of livestock. Earthen tanks such as this, to furnish water temporarily, are constructed at little cost by the rancher with a fresno and horses.*

At 1½ miles from water, for example, grazing use by cattle generally drops off perceptibly. Any effort to attain full utilization of the range at this or greater distances would result in too heavy grazing on the areas closer to water.

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Obviously, on most yearlong ranges some overgrazing adjacent to water is unavoidable, but it should always be held to a minimum. Judicious development of temporary watering places and use of salt beyond the usual effective grazing distance from permanent water (fig. 8) will aid greatly in attaining satisfactory utilization of outlying forage.

FIGURE 8.—*Salt placed at reasonable distances from water will aid better distribution of livestock.*

SYSTEMATIC CULLING AND MARKETING

Cull Systematically

Systematic culling, which removes each year barren animals, "shy" breeders, overage cows (9 to 10 years), unfit bulls, and animals with otherwise undesirable qualities, not only allows disposal of such livestock when most marketable, but also permits more efficient use of forage with younger productive cows or desirable heifers.

Culling down to a young breeding herd is good business. Such a breeding herd will produce calves of uniform conformation, color, and other qualities necessary to attain the higher prices at market.

When droughts come, even closer and more critical culling avoids excessive losses.

Market Wisely

The practice of yearly marketing of the normal surplus of the herd removes a great deal of the gamble from the livestock business. The value of a regular yearly income

should not be ignored because of the temptation to hold livestock over for a period of better prices, in spite of inadequate range forage production.

Present-day marketing facilities are a valuable aid in adjusting numbers of livestock to the grazing capacity by enabling most operators to market a few head of cattle at any time in the year. The story of many ranch failures may be summed up briefly by the words: "Didn't sell, couldn't sell, and had to sell."

In a bad season, when forage is short despite conservative stocking, it is advisable to market more heavily, for protection of the remaining herd.

AVOID "GRASS DEBTS"

Cattle production on southwestern ranges should be clearly visualized as a long-continuing business enterprise, especially in view of the certainty that the present heavy demand for beef and hides will continue into the future.

FIGURE 9.—*The "grass reserve" and high-quality livestock always go together.*

In order to stabilize the range industry, on a long-time basis, to meet war demands, and offer economical production in the post-war period, effective application of sound stocking practice is necessary. Experience has shown that the man who makes a habit of selling, regardless of market prices, in order to keep his stocking adjusted to the capacity of his range will in the long run be most successful.

If more than the yearly increment of forage produced is used up by continued close grazing each year, a "grass

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debt" will accumulate which will inevitably result in a decrease in the income-producing capacity of the range. On the other hand, a reasonable amount of unused forage carried over into the next growing season pays dividends not only as drought insurance but also in building up the soil and increasing plant vigor.

Build up a "grass reserve," and that reserve will more than make up in productivty and quality of livestock (fig. 9), what little it has cost in quantity of animals grazed. Furthermore, it will see you through the lean years, and in the long run establish for you a sound business property.

Prepared by

Kenneth W. Parker, *Forest Ecologist*
Southwestern Forest and Range Experiment Station

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